REMARKS

Reconsideration and allowance of the above-referenced application are respectfully requested.

I. STATUS OF THE CLAIMS

Claims 1, 3-9, 11-20 and 22-31 are currently pending.

II. REJECTION OF ALL CLAIMS UNDER 35 USC 101

In the last sentence on page 2 of the Office Action, the Examiner assets that the claims represent abstract ideas without any concrete, tangible and useful application. However, as recited in the claims, the claimed invention relates to simulating phenomena of the combined particle.

It is respectfully submitted that the simulation of phenomena of a particle is a practical, useful application. For example, by simulating a phenomena, the phenomena can be studied and analyzed. As an example, on page 2, first paragraph of the specification, it is disclosed that:

> "It is often required to simulate a phenomena . . . . The simulated phenomena can include, for example, crystal growth, surface adsorption and surface damage of a material or structure."

Therefore, it is submitted that the simulation of a phenomena is a very important and practical application, having many uses.

Moreover, item (A)(1) of MPEP 706.03(a)(1) specifically states that "if the applicant has asserted that the claimed invention is useful for any particular purpose ... do not impose a rejection based on lack of utility." This section of the MPEP also states

that "an applicant must provide only one credible assertion of specific utility for any claimed invention to satisfy the utility requirement."

In view of the Applicant's assertion that simulation of phenomena of a particle is a practical, useful application, it is respectfully submitted that the claims satisfy the utility requirement of 35 USC 112, first paragraph.

* * *

The Examiner asserts that, in the claims, "there is no pre-or post-computer solution activity."

Under MPEP 2106, Item IV(B)(2)(b)(i), various "safe harbors" include "manipulation of data representing physical objects or activities (pre-computer process activity)." This provision specifically states that "another statutory process is one that requires the measurements of physical objects or activities to be transformed outside of a computer into computer data." The MPEP lists specific examples, such as "a method of using a computer processor to analyze electrical signals and data representative of human cardiac activity ...."

As an example, the present invention as recited in claim 1 sets information for defining a plurality of generation periods and a corresponding number of adsorbate particles to be generated during each generation period. Adsorbate particles are then generated in accordance with this information and motion of the generated adsorbate particles is computed, to simulate phenomena of the combined particle. It is respectfully submitted that such recitations clearly qualify as "pre-computer process activity" and would thereby be a "safe harbor" under MPEP 2106.

* * *

In view of the above, it is respectfully submitted that the rejection is overcome.

III. OBJECTION TO CLAIM 23 AS BEING OF IMPROPER DEPENDENT FORM FOR FAILING TO FURTHER LIMIT THE SUBJECT MATTER OF A PREVIOUS CLAIM

It is respectfully submitted that this rejection is not understood by the Applicants, as claim 23 is not a dependent claim. Instead, claim 23 is an independent claim.

In the objection, the Examiner asserts that the preamble indicates an apparatus claim, but the limitations indicate a method. The Applicants respectfully submit that it is proper for an apparatus claim to recite various processes performed by the apparatus. See, for example, MPEP 2173.05(g), which states:

"A functional limitation is an attempt to define something by what it does, rather than by what it is. There is nothing inherently wrong with defining some part of an invention in functional terms. Functional languages does not, in and of itself, render a claim improper."

MPEP 21.73.05(g) further states "a functional limitation is often used in association with an element ... to define a particular capability or purpose that is served by the recited element."

In view of the above, it is respectfully submitted that claim 23 is in proper form, and it is respectfully requested that the objection be withdrawn.

IV. REJECTION OF ALL CLAIMS UNDER 35 USC 112, FIRST PARAGRAPH

In item 10 on page 5 of the Office Action, the Examiner asserts that adsorbate particles and adsorbate particles, and the simulations of such particles, are known. Thus, the underlying basis for the rejection appears to be the "combined particle" recited in the claims.

For example, in item 7 on page 10 of the Office Action, the Examiner indicates that the meaning of the recited "combined particle" formed of adsorbate particles and substrate particles is unclear.

As is recognized by the Examiner, substrate particles and adsorbate particles are known. Moreover, combined particles formed of adsorbate particles and substrate particles are also known. Various embodiments of the present invention are directed to "simulating" such a known combined particle. Please note that the claims do not recite the process of "combining." Therefore, it is respectfully submitted that there is no further need to define how such particles are combined.

Moreover, FIG. 2(a) of Misaka (cited by the Examiner) shows a combined particle, such as that in various embodiments of the present invention, although Misaka does not name it a "combined particle."

It is respectfully submitted that the rejection under 35 USC 112 will largely be overcome through the recognition that combined particles are known, and that the claims do not recite the process of "combining."

The Examiner requests a copy of a software package implementing the present invention. It is respectfully submitted that complying with such a request would be a very heavy, expensive burden on the Applicants. Therefore, it is respectfully requested that the Examiner withdraw his request for a software package.

In view of the above, it is respectfully submitted that the rejection is overcome.

V. REJECTION OF ALL CLAIMS UNDER 35 USC 103 AS BEING UNPATENTABLE OVER MISAKA OR BAUMANN IN VIEW OF THE EXAMINER'S OWN EXPERIENCE AND THE TAKING OF OFFICIAL NOTICE

Baumann discloses that incoming spheres nearby the surface are generated by a Monte Carlo method. Baumann does not disclose individual particles which each have a corresponding emission source as recited, for example, in claim 1. Thus, Baumann does not disclose that, for each individual particle, a kinetic condition setting unit sets a region indicating a position of the corresponding emission source, as recited, for example, in claim 1.

FIG. 1 of Misaka discloses a particle transport model 15 for use in a simulator. The particle transport model 15 of Misaka is somewhat similar to an emission source of various embodiments of the present invention. However, Misaka does not disclose how to use such a source in a manner as in the present invention. For example, Misaka does not disclose or suggest the size of the source or the distance between the source and a substrate. Therefore, it is unclear how the particle transport model of Misaka would be used as, for example, an emission source such as recited in claim 1. Thus, Misaka does not disclose that, for each individual particle, a kinetic condition setting unit sets a region indicating a position of the corresponding emission source, as recited, for example, in claim 1.

In summary, neither Baumann nor Misaka, taken individually or in combination, discloses a particle formed of both adsorbate particles and substrate particles, where each adsorbate particle has a corresponding emission source, and that the adsorbate particles are generated in accordance with the positions of the emission sources, as recited in various of the claims.

In view of the above, it is respectfully submitted that the rejection is overcome.

VI. REJECTION OF CLAIMS 1, 3-9, 11-20, 22-26 AND 28-31 UNDER 35 USC 103 AS BEING UNPATENTABLE OVER (YAMADA OR MISAKA OR BAUMANN OR HUSINSKY) IN VIEW OF (KINEMA/SIM OR REEVES OR COHEN)

The above comments for distinguishing over Misaka and Bauman also apply here.

Reeves relates to modeling "fuzzy" objects such as clouds, smoke, water and fire. Reeves does not disclose the use of adsorbate particles or substrate particles. Thus, Reeves cannot achieve, and does not address, various objects of various embodiments of the present invention, such those directed to crystal growth, surface adsorption, and surface damage.

The "generation shape" of Reeves is somewhat similar to an emission source of various embodiments of the present invention. However, generally, the present invention relates to the

generation of atoms or molecules, and not the "fuzzy" objects of Reeves. Therefore, for example, the manner of setting initial velocity of generated particles in various embodiments of the present invention is significantly different than anything in Reeves.

In summary, neither Reeves nor Cohen, taken individually or in combination, discloses a particle formed of both adsorbate particles and substrate particles, where each adsorbate particle has a corresponding emission source, and that the adsorbate particles are generated in accordance with the positions of the emission sources, as recited in various of the claims as amended herein.

In view of the above, it is respectfully submitted that the rejection is overcome.

VII. REJECTION OF ALL CLAIMS UNDER 35 USC 103 AS BEING UNPATENTABLE OVER OHIRA IN VIEW OF KINEMA/SIM OR REEVES OR COHEN

The above comments for distinguishing over Reeves and Cohen also apply here.

Kinema/Sim does not relate to a particle formed of both adsorbate particles and substrate particles, where each adsorbate particle has a corresponding emission source, and that the adsorbate particles are generated in accordance with the positions of the emission sources, as recited in various of the claims.

As an example, Kinema/Sim cannot control the temperature of the substrate particles and it cannot stop movement of the substrate particle. Therefore, as an example, Kinema/Sim cannot simulate crystal growth, surface adsorption, and surface damage. As Kinema/Sim is not directed to, and cannot achieve, various objects of the present invention, Kinema/Sim should not be combined with the other references to reject the claimed invention.

Ohira does not disclose an adsorbate emission source. Therefore, for example, Ohira does not disclose how to set generation schedules and initial velocities for plural number of adsorbate particles. Thus, Ohira cannot achieve various objects of the present invention, and should not be combined with the other references to reject the claimed invention.

In view of the above, it is respectfully submitted that the rejection is overcome.

VIII. CONCLUSION

In view of the above, it is respectfully submitted that the application is in condition for allowance, and a Notice of Allowance is earnestly solicited.

If any further fees are due by the filing of this Amendment, please charge same to deposit account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY

Date: June 8, 2001

By: _____

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